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a six-page report on research and development plans of the Hungarian Air Force. The report also contains the names of officials concerned with research in this field and deals further with financial problems of the aircraft development program. There is no doubt that on account of the Hungarian uprising this development program has undergone fundamental changes as to research, production, financing, and personnel. However, some information contained in the report may be still of value.

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## Hungarian Air Force Plans for Aircraft Research and Development Projects

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In September, 1956, the Engineering Service of the Hungarian Air Force had prepared a list of research and development plans which were either then actively being pursued or which the Engineering Service considered should be undertaken in the near future in connection with plans for the expansion of the Hungarian aircraft industry.

2. The Hungarian Air Force officers associated with these development projects were:-

a) (Major) HORVATH : in command of the Industrial Section, Hungarian Air Force, Engineering Department;

b) (Major) KUTASI : in command of the Development Section, Hungarian Air Force, Engineering Department;

c) (Captain) SZERENDI : second in command of the Development Section, Hungarian Air Force, Engineering Department;

d) (Senior Lieutenant) BRUDER : in command of Spare Parts Subsection, Hungarian Air Force, Engineering Department.

3. A total sum of some ten million forints had been officially allocated for Air Force development work. This money was controlled by the Hungarian Army Council, together with funds for other military research and development, and the Air Force Engineering Service was required to prepare yearly estimates of funds necessary for development work in hand.

4. Since it was the avowed policy of the Hungarian Army Council and the Ministry of Defence to discourage long-term development projects, it was extremely difficult for the Hungarian Air Force Engineering Service to obtain financial approval for projects which they intended to be preliminary development and research for the envisaged expansion of the Hungarian aircraft industry.

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5. The problem of finance was usually overcome with the cooperation of Atalanos Goptervező Inoda (AGTI) officials at BUDAÖRS, this office accepting the initial responsibility for paying outside institutes and factories and then passing the consolidated accounts to the Hungarian Air Force Engineering Service. As AGTI was actively engaged on a great deal of approved work for the Hungarian Air Force, it was always possible to make the Hungarian Air Force estimates for work at AGTI sufficiently elastic to cover expenditure on special projects, care being taken that, by the time the final accounts had to be settled, these projects had been successfully completed and financial approval was always given, even if grudgingly.

6. Thus in the 1957 Air Force estimates, a figure of some four and a half million forints was included for AGTI although it was known that its actual capacity on approved projects could not exceed two million forints. Similarly the 1957 estimates included some 100,000 forints for MiG 19 spares which it was, in fact, estimated would not have been required. As it was a firm rule that money once approved must be spent somehow, it was hoped to be able to devote this sum to research and development projects.

7. The research and development plan drawn up by the Hungarian Air Force comprised some thirty projects. Details of the most important projects are as follows.

Helicopter production

8. An all-Hungarian helicopter was being developed by Professor Bela SAMU. This helicopter incorporated a "stable rotor" developed by SAMU and would have been powered by an AS 82 engine. In October, 1956, a small model had been completed and plans were then ready for the production at ALAG of two prototypes. Major KUTACI and Captain SZARADOI were closely associated with this project.

Courier aircraft development

9. The drawing offices at ESZTERGOM and at the AGTI office at BUDAÖRS

/were.....

were already working on a projected Hungarian courier and trainer type aircraft. This was to be a single-engine two-seater monoplane with maximum speed of 400 - 450 kilometres per hour, cruising speed of 300 kilometres per hour, capable of operating from very small airfields. The aircraft was to be powered by a Czech PRAHA DORIS engine and it was hoped that a prototype would be produced at ESZTERGOM by 1958. 25X1

10. Although the main interest of Major KUTACS and Captain SZERDOI, both of whom were collaborating on this project, was in the production of a military courier trainer aircraft, civilian requirements were also being carefully considered in the design. It was, for example, proposed that the aircraft should be suitable for agricultural spraying purposes and that a seat should be easily removeable to facilitate conversion for postal or ambulance services.

Radio-controlled target aircraft

11. In September, 1956, a model of a radio-controlled target aircraft was tested at BUDAORS but some fault developed and the model crashed on the concrete apron.

12. This was a model of an aircraft which was being designed by the AGTI office at BUDAORS. Plans for a prototype had already been approved by (Colonel) NADOR and a prototype demonstration for Ministry of Defence officials had before this accident been provisionally arranged for December, 1956.

13. This target aircraft, which was designed both for ground to air and air to air work, was required to be simple and cheap in production. It was to have a minimum wing span of four metres, a maximum speed of 700 - 750 kilometres per hour and to be controllable for up to eight kilometres from base. This aircraft would have been powered by either an ARGUS or a TATRAPLAN engine.

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14. All airframe and engine specifications for this aircraft were being prepared by AGTI. The radio control equipment was being developed by Bela UITZ, a civilian electronics expert, who had been employed since 1954 on development projects at the Air Force unit 5505 at BUDAORS.

Automatic Control Radar Warning System

15. A highly secret project was being pursued by both AGTI and the Communications Research Institute, BUDAPEST, in connection with a radar development worked out jointly by (Major) KUTACI and (Captain) SZARADOI.

16. This project envisaged an entirely automatic radio link between radar control centres along the Hungarian frontier and a central radar screen in BUDAPEST, this latter probably in the Hungarian Air Force Headquarters.

17. All work on the mechanical computers required for this project was being carried out by Lazlo BALADI, a senior engineer of AGTI. The first computer was being manufactured at the KOZLEKEDESI MERLEUSZEK GYAR, BUDAPEST, Bela Utca, and [redacted], this computer was known to be 70% completed. 25X1

Alloys

18. Plans were being drawn up both by AGTI and by the VAS ES FEM IPARI KUTATO INTEZET, Fehervari Ut., BUDAPEST XII, for the production of titanium and aluminium alloy spares for the aircraft industry. Those actively concerned in this project were:-

a) Captain SZARADOI
b) Senior Lieutenant BRUDER
c) Tirador SZENDROI of AGTI
d) Lajos ZORKOCZY of the Metal Research Institute.

19. Work was also in hand to arrange for the manufacture at CSEPEL in

/Hungary.....

Hungary of beryllium bronze for use in the manufacture of diaphragms for aircraft. Small quantities had already been produced and satisfactory tests carried out on diaphragms and [redacted] 25X1 discussions were taking place concerning manufacture of the necessary quantities of beryllium bronze which they had hitherto been forced to purchase abroad.

21. Senior Lieutenant BRUDER, SZENDROI of AGTI and PAR, Chief Technologist of CSEPEL steelworks, were associated on this project.

Metal Adhesion

22. Research work was being carried out by AGTI, the Synthetic Materials Research Institute and the Chemistry Department of the MDTVOS LORANT TUDOMANY EGYETEM into possible methods of metal to metal adhesion. This work was begun as a result of reading articles in Western aircraft magazines concerning similar experiments. It was hoped to achieve a simple and inexpensive substitute for welding or rivetting airframes.

23. Maria NANASHI, a chemist in AGTI, and Senior Lieutenant BRUDER were two of the personnel cooperating on this project.

Silicon

24. Major KUTASI and Captain SZERDOI were themselves carrying out some research into the possible uses of silicon oils and silicon rubber.

Plastics

25. The Synthetic Materials Research Institute was cooperating with the Hungarian Air Force on the application of plastics in manufacturing aircraft spares. This project was under the control of Senior Lieutenant BRUDER.

26. The main ways in which plastics were being used were:-

a) Flexible.....

a) Flexible tubes for hydraulic and fuel systems

b) Auxiliary fuel tanks. (This was a departure from the Soviet method of using paper mache.)

c) Flexible washers

d) Target drogues.

27. It was intended to begin research in 1957 on the possibilities of using plastics in the manufacture of aircraft tyres.

Fatigue Problems

28. Hungarian Air Force engineers were not completely satisfied that the overhaul system as laid down for the various aircraft was any more than a rough guide and they were not happy that there had been any thorough and scientific investigation into the "fatigue" problems of various engine and airframe components.

29. Major KUTASI, Captain SZERADOI, Gabor KOZMON, Chief Technologist of AGTI/BUDAORS and BELADI were engaged in theoretical preparations for a full programme of scientific research into various aspects which they considered urgent and were ready with the first 25X1 practical step, the development of fully automatic instruments for registering separately airframe and engine hours flown.

Air Colour Photography

30. Captain SZERADOI was in contact with the FORTE film factory regarding the development of air colour photography.

Aircraft Wheel Activator

31. Major KUTASI and BELADI of AGTI had in an advanced stage of development a method of setting aircraft wheels in motion before actual touchdown.

Aircraft Rockets

32. Plans were in hand for development work to be carried out by AGTI on air to air and air to ground rocket projectiles for the Hungarian Air Force.